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EXAMINER
MASKULINSKI, MICHAEL C

ART UNIT	PAPER NUMBER
2113	

DATE MAILED: 09/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/972,365	BUNGERT ET AL.	
	Examiner	Art Unit	
	Michael C Maskulinski	2113	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 March 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 March 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Non-Final Office Action

Drawings

1. The drawings were received on March 29, 2002. The Examiner accepts these drawings.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-16 and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Lenz et al., US 2001/0032025 A1.

Referring to claim 1:

a. In paragraph 0023, Lenz et al. disclose processor sensors that comprise any device suitable for measuring a process variable, such as temperature, pressure, motion, direction, rate of change, and the like (identifying components in the system).

b. In paragraph 0023, Lenz et al. disclose that the process controller receives a measurement (identifying outputs to each identified component) of a process variable (inputs including possible fault conditions), from a process sensor.

c. In paragraph 0005, Lenz et al. disclose collecting and storing process attribute information in a plurality of databases, receiving at least one process measurement from a measurement device, similarity searching the at least one process measurement against the process attribute information stored in the databases, assigning a similarity score to the process measurement, and comparing the similarity score to a match tolerance level (determining functional relationships between the inputs and outputs for each identified component; and determining fault conditions based on the functional relationships and the outputs and other inputs).

Referring to claim 2, in paragraph 0005, Lenz et al. disclose collecting and storing process attribute information in a plurality of databases, receiving at least one process measurement from a measurement device, similarity searching the at least one process measurement against the process attribute information stored in the databases, assigning a similarity score to the process measurement, and comparing the similarity score to a match tolerance level. Further, in paragraph 0026, Lenz et al. disclose that when the similarity score is below the match tolerance level, then the process controller may determine that the measurement received is inaccurate (using the identified inputs and outputs of a specific component and the functional relationships of a corresponding generic component to identify the fault conditions).

Referring to claims 3 and 16, in paragraph 0028, Lenz et al. disclose that process attribute information is stored in a plurality of disparate databases. The databases may comprise process variable databases, condition monitoring databases, process

machine attribute databases, etc. (defining component libraries that describe the functional relationships of the generic components).

Referring to claim 4, in paragraph 0024, Lenz et al. disclose that the similarity searching may be performed by a similarity search engine (SSE) that resides on the process controller (creating a diagnostic program from the functional relationships of the generic components associated with each component).

Referring to claim 5, in paragraph 0026, Lenz et al. disclose that it is determined whether the similarity score meets or exceeds the match tolerance level. Where the similarity score is below the match tolerance level, then the process controller may determine that the measurement received is inaccurate (transforming the functional relationships into fault conditions).

Referring to claim 6, in paragraph 0009, Lenz et al. disclose a similarity search engine for similarity searching the measurement against the process attribute information stored in the databases, a means for assigning a similarity search score to the measurement, a means for comparing the similarity search score to a match tolerance level (the step of transforming is implemented in an off-line phase during which the diagnostic program is created, and an on-line phase during which available inputs and outputs are supplied to the transformed functional relationships in the control program, to identify fault conditions).

Referring to claim 7, in paragraph 0009, Lenz et al. disclose a similarity search engine for similarity searching the measurement against the process attribute

information stored in the databases, a means for assigning a similarity search score to the measurement (associating a weighting factor with each fault condition).

Referring to claims 8 and 13, in paragraph 0047, Lenz et al. disclose that process machine monitoring variables may comprise any variables that can be related physically or mathematically to machine condition or performance. Process machine monitoring variables may include, for example, vibration, shaft alignment, bearing temperature, motor current, flux data, etc. (the step of including state information for at least one of the components to define the state of the component at a different time).

Referring to claim 9:

a. In paragraph 0023, Lenz et al. disclose processor sensors that comprise any device suitable for measuring a process variable, such as temperature, pressure, motion, direction, rate of change, and the like (identifying components in the system).

b. In paragraph 0023, Lenz et al. disclose that the process controller receives a measurement (identifying outputs to each identified component) of a process variable (inputs including possible fault conditions), from a process sensor.

c. In paragraph 0005, Lenz et al. disclose collecting and storing process attribute information in a plurality of databases, receiving at least one process measurement from a measurement device, similarity searching the at least one process measurement against the process attribute information stored in the databases, assigning a similarity score to the process measurement, and

comparing the similarity score to a match tolerance level (determining functional relationships between the inputs and outputs for each identified component; and determining fault conditions based on the functional relationships and the outputs and other inputs).

d. In paragraph 0060, Lenz et al. disclose that the invention may be implemented using standard programming or engineering techniques including computer programming software, firmware, hardware or any combination or subset thereof (expressing the functional relationships using a programming language).

Referring to claim 10, in paragraph 0060, Lenz et al. disclose that the invention may be implemented using standard programming or engineering techniques including computer programming software, firmware, hardware or any combination or subset thereof (wherein the programming language is a symbolic language).

Referring to claim 11, in paragraph 0028, Lenz et al. disclose that process attribute information is stored in a plurality of disparate databases. The databases may comprise process variable databases, condition monitoring databases, process machine attribute databases, etc. (defining functional relationships for at least some of the functional elements includes utilizing a component library that defines the functional relationships between inputs and outputs of at least one generic element).

Referring to claim 12, in paragraph 0005, Lenz et al. disclose collecting and storing process attribute information in a plurality of databases, receiving at least one process measurement from a measurement device, similarity searching the at least one

process measurement against the process attribute information stored in the databases, assigning a similarity score to the process measurement, and comparing the similarity score to a match tolerance level. Further, in paragraph 0026, Lenz et al. disclose that when the similarity score is below the match tolerance level, then the process controller may determine that the measurement received is inaccurate (the step of defining the functional relationships includes the step of defining functional relationships and inputs and outputs of the generic elements corresponding to the functional elements in the system).

Referring to claim 14:

a. In paragraph 0023, Lenz et al. disclose processor sensors that comprise any device suitable for measuring a process variable, such as temperature, pressure, motion, direction, rate of change, and the like (defining a component in the automation system).

b. In paragraph 0023, Lenz et al. disclose that the process controller receives a measurement (the component output) of a process variable (the component input), from a process sensor.

c. In paragraph 0005, Lenz et al. disclose collecting and storing process attribute information in a plurality of databases, receiving at least one process measurement from a measurement device, similarity searching the at least one process measurement against the process attribute information stored in the databases, assigning a similarity score to the process measurement, and comparing the similarity score to a match tolerance level (in an off-line mode

developing a fault model by defining a fault relationship between the input and the output of the component, the fault relationship representative of a fault condition).

d. In paragraph 0060, Lenz et al. disclose that the invention may be implemented using standard programming or engineering techniques including computer programming software, firmware, hardware or any combination or subset thereof (transforming the fault model into the diagnostic program for execution by an execution device).

e. In paragraph 0009, Lenz et al. disclose a similarity search engine for similarity searching the measurement against the process attribute information stored in the databases, a means for assigning a similarity search score to the measurement, a means for comparing the similarity search score to a match tolerance level (in an on-line mode, executing the diagnostic program in the execution device to identify a component failure of the automation system based upon the fault condition).

Referring to claim 15, in paragraph 0047, Lenz et al. disclose that process machine monitoring variables may comprise any variables that can be related physically or mathematically to machine condition or performance. Process machine monitoring variables may include, for example, vibration, shaft alignment, bearing temperature, motor current, flux data, etc. (defining a plurality of sub-components of the component, each sub-component including an input and output having associated therewith a sub-component fault relationship).

Referring to claim 19, in paragraph 0047, Lenz et al. disclose a process controller (a programmable logic controller also executing a control program that controls the automation system).

4. Claims 14-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Ramadei et al., US 2002/0166082 A1.

Referring to claim 14:

a. In paragraph 0014, Ramadei et al. disclose an electromechanical mail machine having one or more electromechanical modules such as a paper feeder, feeder module, a scanner module, a sealer module, a twister module, a folder module, and inserter modules to name a few (defining a component in the automation system, the component having an input and an output).

b. In paragraph 0016, Ramadei et al. disclose filter parameters that are used to construct filters where the parameters correlate to various machine and module behavior patterns or signatures (defining a fault relationship between the input and the output of the component, the fault relationship representative of a fault condition).

c. In paragraph 0016, Ramadei et al. disclose a fault recognition module (transforming the fault model into the diagnostic program for execution by an execution device).

d. In paragraph 0018, Ramadei et al. disclose that the expert system module and fault recognition module both reside in program memory within the general-purpose computer of the diagnostic system (in an on-line mode, executing the

diagnostic program in the execution device to identify a component failure of the automation system based upon the fault condition).

Referring to claim 15, in paragraph 0014, Ramadei et al. disclose an electromechanical mail machine having one or more electromechanical modules such as a paper feeder, feeder module, a scanner module, a sealer module, a twister module, a folder module, and inserter modules to name a few (defining a plurality of sub-components of the component, each sub-component including an input and output having associated therewith a sub-component fault relationship).

Referring to claim 16, in paragraph 0005, Ramadei et al. disclose that the system diagnoses one or more faults through the use of a fault tree (a component library that describes the functional relationships of generic components).

Referring to claim 17, in paragraph 0020, Ramadei et al. disclose that filters represent actual and/or potential fault patterns, and/or error codes. The module produces a result file delineating which filters and error codes were found and a degree of importance/relevance (assigning a weighting factor to the fault condition to determine the likelihood that the fault condition is the cause of a component failure).

Referring to claim 18, in paragraph 0022, Ramadei et al. teach that the fault condition includes a time dependency such that the corresponding fault relationship describes how a present input value, a present state value, and a present fault cause a present output value and a next state value.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 6,718,294 B1 Bortfeld

U.S. Patent 6,633,782 B1 Schleiss et al.

U.S. Patent 6,615,090 B1 Blevins et al.

U.S. Patent 6,606,671 B1 McNamer et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C Maskulinski whose telephone number is (703) 308-6674. The examiner can normally be reached on Monday-Friday 9:30-6:00. After October 15, 2004, the Examiner can be reached at telephone number: (571) 272-3649.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert W Beausoliel can be reached on (703) 305-9713. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MM

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